

Community for Data Integration FY19 Statement of Interest Lightning Presentation Session

28 November 2018

Ask questions on [slido.com](https://www.slido.com), #8835

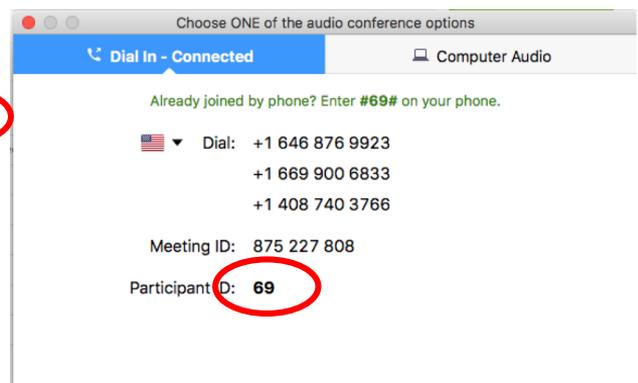
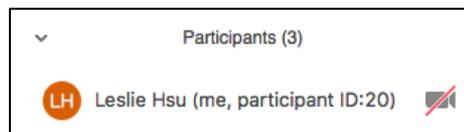
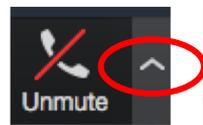
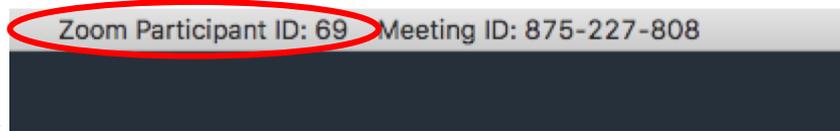
Welcome to the zoom app

If you are using your phone for audio, please connect your name to your phone number.

To find your participant ID, look in the title bar of your zoom window, or expand the menu by the phone icon in the lower left corner.

If already on phone, punch (#, “your participant ID”, #) on the phone keypad

If you are on the web app but not yet on the phone, punch (“participant ID”, #) when prompted during sign-in



CDI FY19 SOI Lightning Presentation Session

- Goal: Communicate and collaborate!
- Today's presentation process
- Q&A
- Examine and rank
- Voting: ballot will arrive Nov 30, voting open until Dec. 14.

The Community for Data Integration in one minute



Leslie Hsu

lhsu@usgs.gov

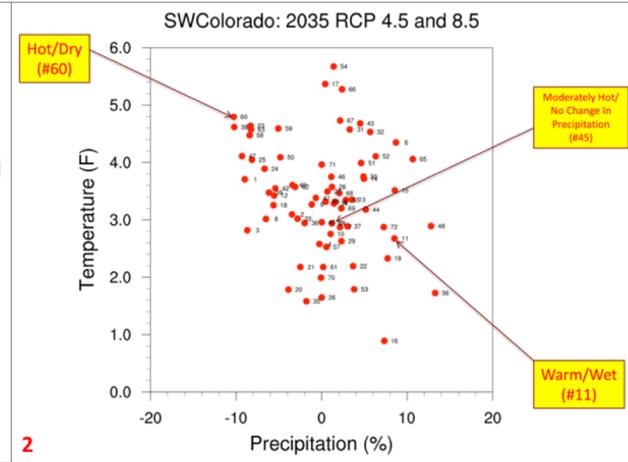
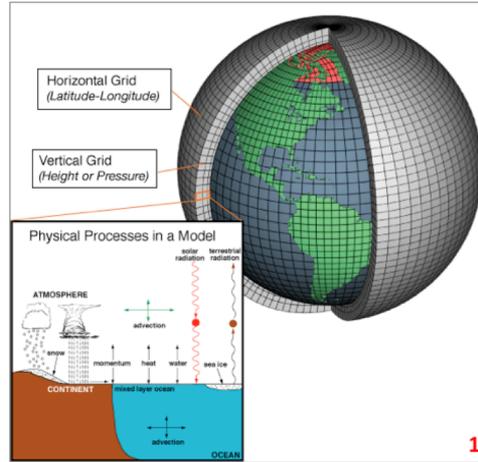
Science Analytics and Synthesis

Open-source and open-workflow Climate Scenarios Toolbox for adaptation planning

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USGS North Central Climate Adaptation Science Center



Three Climate Scenarios for the Gunnison Basin Region by 2035

The following summary was compiled from three climate scenarios and a review of literature. The Hot and Dry scenario is from hadgem2-es1.rp45, the Warm and Wet is from csm3-1.rp45 and Moderate Hot and No Change in Precipitation is from csm3-1.rp45

Scenario	Hot/Dry	Warm/Wet	Moderately Hot/No Change in Precipitation/High Atmospheric Variability
Temperature	Annual temperature increases by 5F. At lower elevations, summer days with temperature above 75F (25C) increases by 3 month, and nights with temperature above 68F = 20	Annual temperature increases by 2F. At lower elevations, summer days with temperature above 75F (25C) increases by 1 week	Annual temperature increases by 9F. At lower elevations, summer days with temperature above 75F (25C) increases by 2 weeks, and nights with temperature above 68F = 20
Precipitation	Annual precipitation decreases by 30%, less frequent and more intense individual precipitation events, summer monsoon rains decrease by 20%	Annual precipitation increases by 10%, more intense individual rain events, summer monsoon rains increase by 10%	Annual precipitation does not change but much greater fluctuations year to year (leading to more frequent forest or forest conditions), El Niño of 1982/83 strength occurs every 7 years
Runoff	Runoff decreases by 20%, and peak runoff occurs 3 weeks earlier	Runoff volume does not change but peak runoff earlier by 1 week	Runoff decreases by 10% and peak runoff occur 2 weeks earlier
Heat Wave	Severe and long lasting, every summer in summer compared to 2002 to 2012 (5F above normal)	Hot summers like 2002 and 2012 occur once every decade	Hot summers like 2002 and 2012 occur once every 3 years
Drought	More frequent drought years like 2002/2012 - every 5 years	No change in frequency but moderate increases in intensity, fewer cases of multi-year drought	Drought years like 2002/2012 occur once every decade
Snowline or Freezing Level	Snowline moves up by 1200ft	Snowline moves up by 600ft	Snowline moves up by 900ft
Wildfire	Fire season widens by 1 month, greater fire frequency (12x) and extent (3x) in high elevation forest	Increases in fire frequency (4x) and extent (6x)	Fire risk during dry years is very high at all elevations, 1/3 of large fuel build up from wet years, on average fire frequency increases 6x, and area burnt increases 11x
Dust Storms	Extreme spring dust events like 2009 every other year causing roadways and peak runoff to be six weeks earlier	Same as current	Frequency of extreme dust events increases from current but tend to extreme dry years
Growing Season	Increases by 3 weeks	Increases by 1 week	Increases by 2 weeks

Source: Isabella Rangelova (Western Water Assessment & NOAA ESRL, Boulder) Renee Rindova (Colorado Natural Heritage Program)

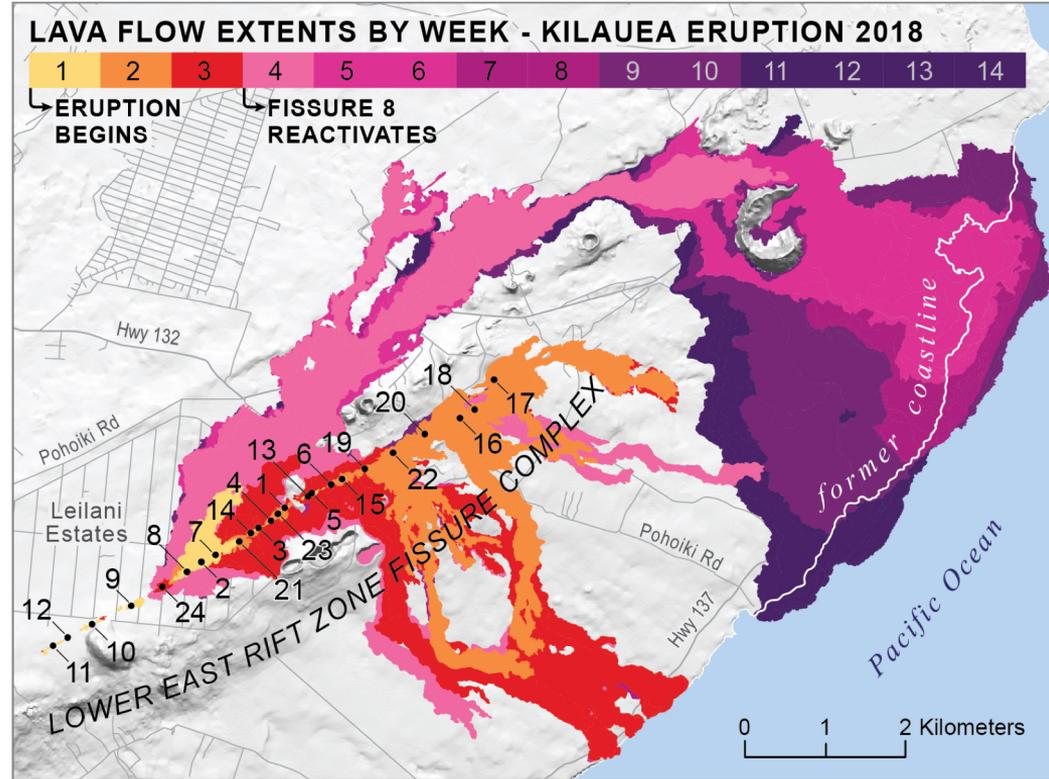


Extending ScienceBase for Disaster Risk Reduction

Joe Bard

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USGS Cascades Volcano Observatory



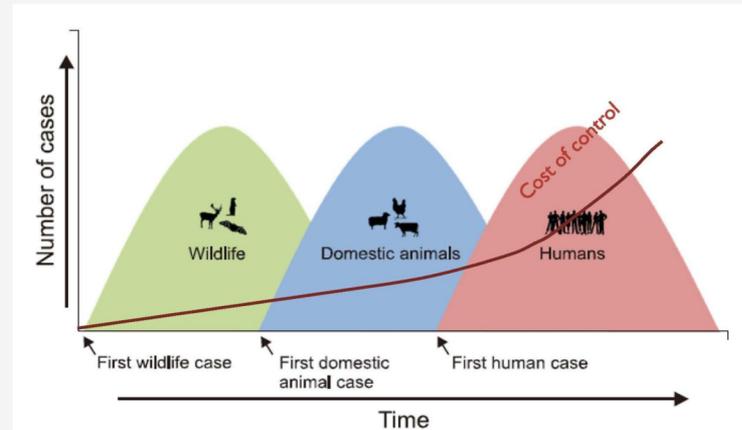
Transforming Biosurveillance by Standardizing and Serving 40 Years of Wildlife Disease Data

David Blehert

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National Wildlife Health Center

WILDLIFE HEALTH DATA ARE CRITICAL FOR NATIONAL BIOSURVEILLANCE



Integrating short-term climate forecasts into a restoration management support tool

John Bradford

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USGS Southwest Biological
Science Center

The screenshot displays the USGS Land Treatment Exploration Tool interface. The top navigation bar includes 'Home', 'About', 'Contact', 'Start Planning', 'User Guide', and 'Share'. The main content area is divided into a left sidebar and a right main panel. The sidebar shows 'Step 1: Describe proposed treatment' with fields for 'Project Name' (Sagebrush Restoration), 'What kind of treatment are you planning?' (Seeding), and 'File Name' (Sagebrush_Restoratio). The main panel shows the 'Short-Term Forecasts' report for a site at (42.37, -125.36). It includes a line graph of soil water potential (MPa) from January to December, comparing 'Coming Year' (purple) and 'Historical' (black) data. A green arrow points to the 'Coming Year' line, which is consistently higher (less negative) than the 'Historical' line. Below the graph is a distribution plot of soil water potential, showing a 'Spring 2019' distribution (green) and a 'Historical' distribution (purple). A vertical dashed line indicates a 'Threshold for establishment' at approximately -1.5 MPa. The 'Spring 2019' distribution is shifted to the left (drier) relative to the 'Historical' distribution, indicating that the site is expected to be slightly drier than normal in the coming spring.

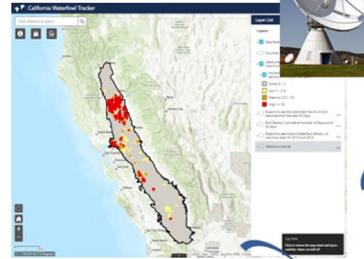
An interactive webtool for disease transmission risk assessment by waterfowl in western North America

Michael Casazza

mike_casazza@usgs.gov

USGS Western Ecological Research Center

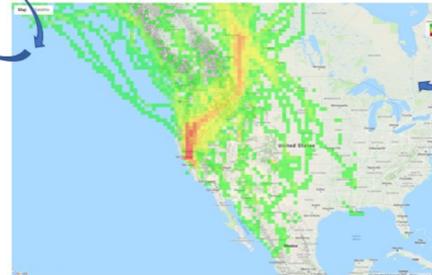
On-going regional
disease risk assessments



On-going waterfowl
telemetry and monitoring



User-driven predictive
analytics for continental
transmission route
accounting for disease
outbreak
origin/destination,
seasonality, and weather.



Location Intelligence through
machine learning



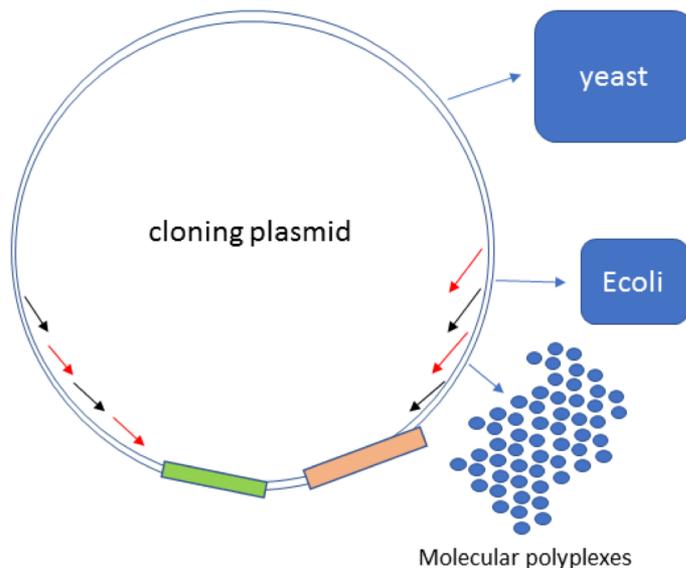
Developing a synthetic environmental DNA (eDNA) spike for use in natural environments

Robert Scott Cornman

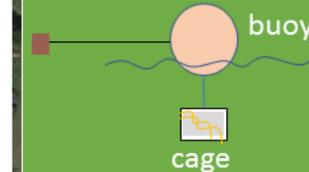
rcornman@usgs.gov

USGS Fort Collins Science Center

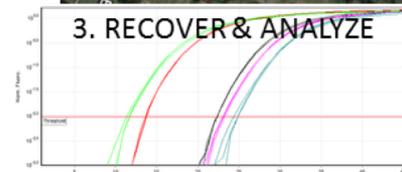
1. FORMULATE



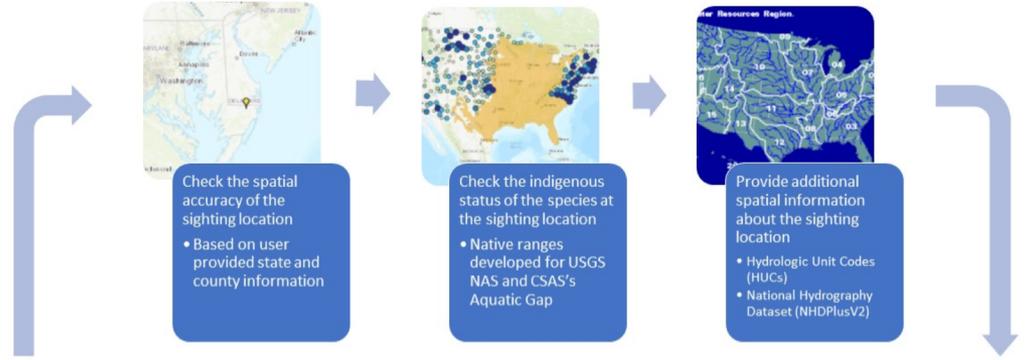
2. DISPERSE



3. RECOVER & ANALYZE



National Public Screening Tool for Invasive and Non-native Aquatic Species Data



Wesley M. Daniel

wdaniel@usgs.gov

USGS Wetland and Aquatic Research Center

Species	Latitude	Longitude	State	County
<i>Noturus insignis</i>	39.59	-77.82	MD	Washington
<i>Noturus insignis</i>	39.15	-77.52	MD	Montgomery
<i>Micropterus salmoides</i>	39.59	-77.82	MD	Montgomery
<i>Micropterus salmoides</i>	39.59	-77.82	MD	Washington
<i>Pylodictis olivaris</i>	39.15	-77.52	MD	Montgomery
Carp	39.15	-77.52	MD	Montgomery

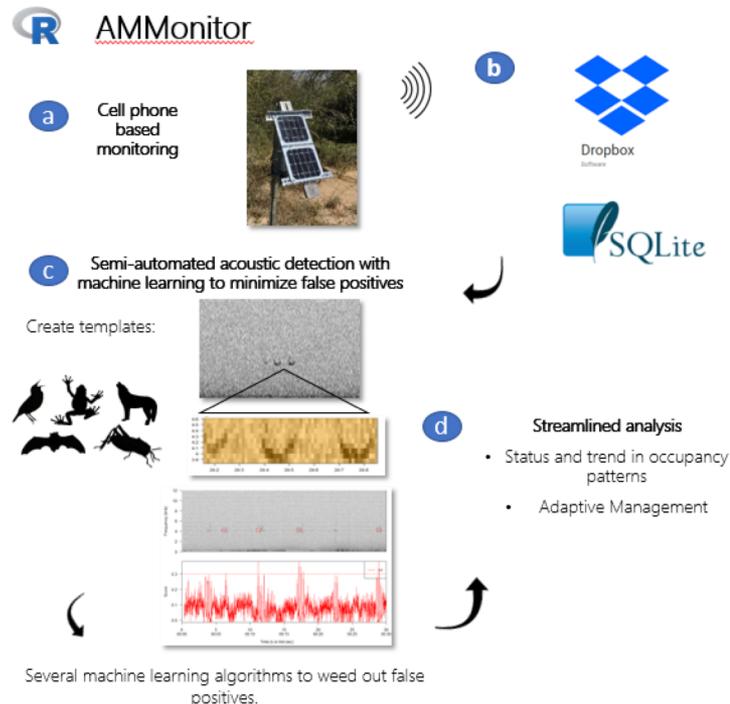
Species	Latitude	Longitude	State	County	Taxa error	Spatial error	Non-native	HUC 8 (Number)	HUC 8 (Name)
<i>Noturus insignis</i>	39.59	-77.82	MD	Washington				2070008	Middle Potomac-Catoctin
<i>Noturus insignis</i>	39.15	-77.52	MD	Montgomery				2070008	Middle Potomac-Catoctin
<i>Micropterus salmoides</i>	39.59	-77.82	MD	Montgomery		X			
<i>Micropterus salmoides</i>	39.59	-77.82	MD	Washington			X	2070008	Middle Potomac-Catoctin
<i>Pylodictis olivaris</i>	39.15	-77.52	MD	Montgomery			X	2070008	Middle Potomac-Catoctin
Carp	39.15	-77.52	MD	Montgomery	X				

Enhancing cell phone monitoring with the R package AMMonitor with R Shiny and Android Applications

Therese Donovan

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USGS Vermont Cooperative Fish and Wildlife Research Unit



HELP!!!!

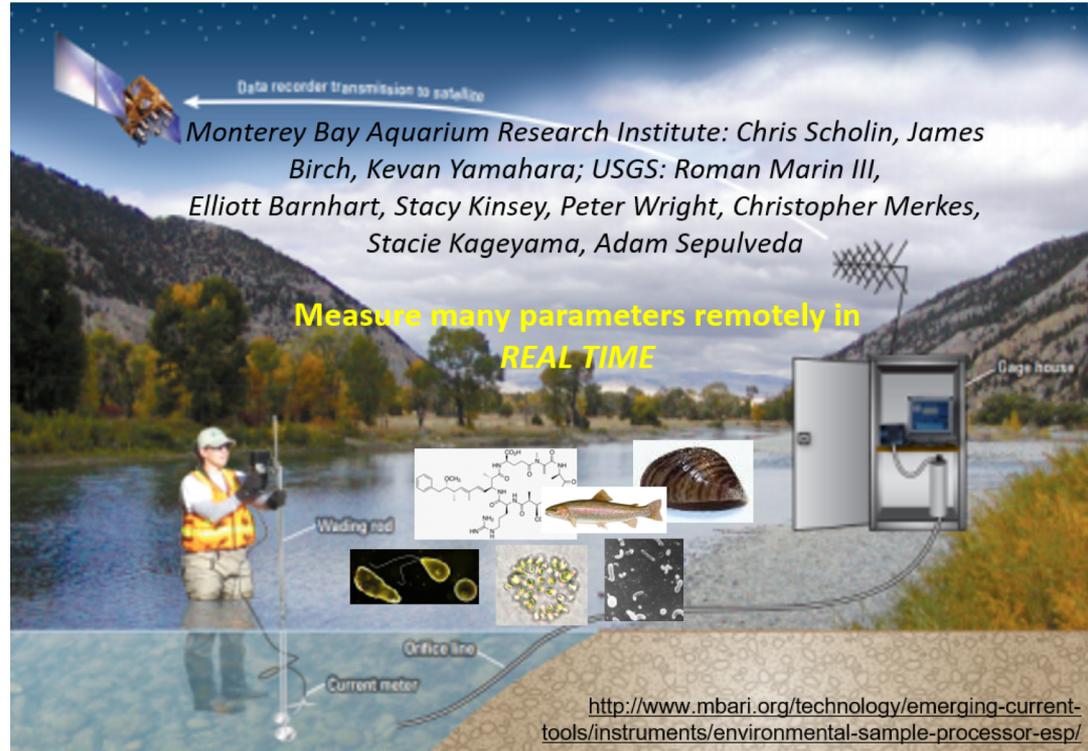
- ✓ Cell phones run on Marshmallow 6.0 and uses Tasker to control other apps. **SOLUTION:** Create a dedicated AMMonitor app.
- ✓ The machine learning algorithms require that a subset of data are “labeled” by humans, a great opportunity for citizen science. **SOLUTION:** Rshiny app for labeling.

High-Resolution, Interagency Biosurveillance of Threatened Surface Waters in the United States

Sara L Eldridge

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USGS Wyoming-Montana Water Science
Center

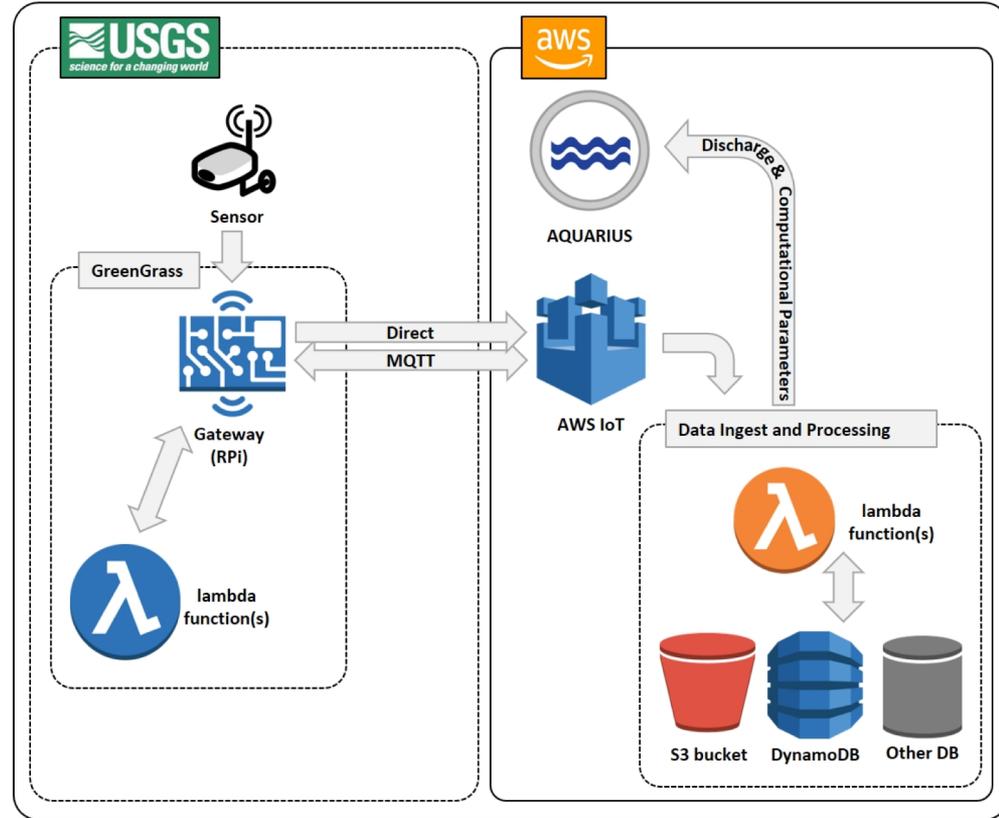


Develop Cloud Computing Capability at Streamgages using Amazon Web Services GreenGrass IoT Framework for Camera Image Velocity Gaging

Frank L. Engel

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USGS Texas Water Science Center

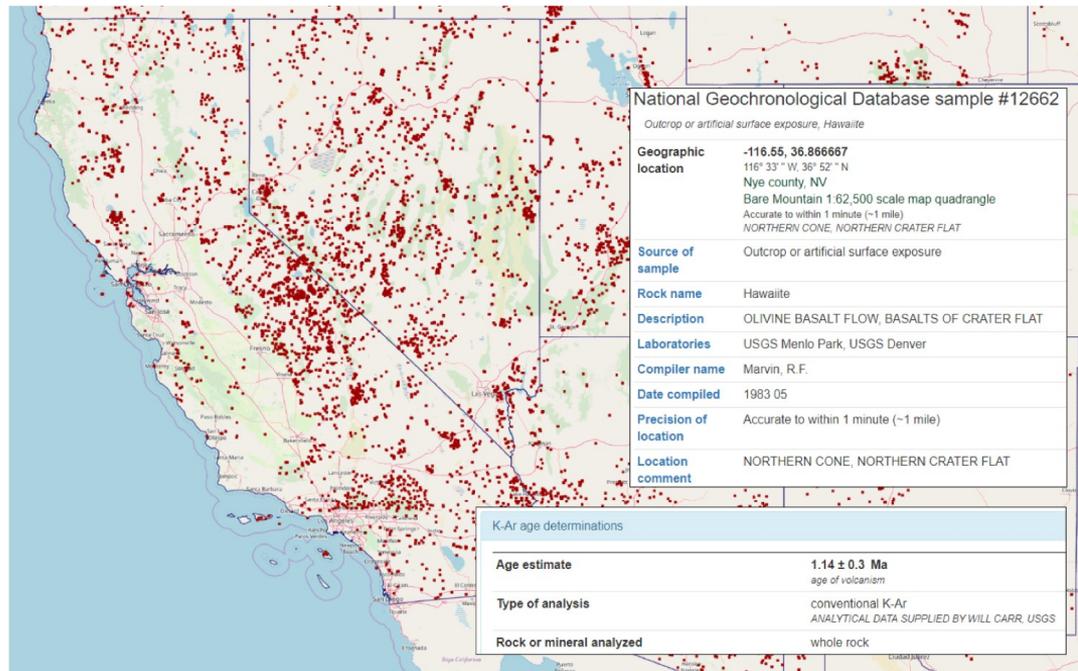


Serving the U.S. Geological Survey's geochronological data

Amy Gilmer

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USGS Geology and Environmental
Change Science Center

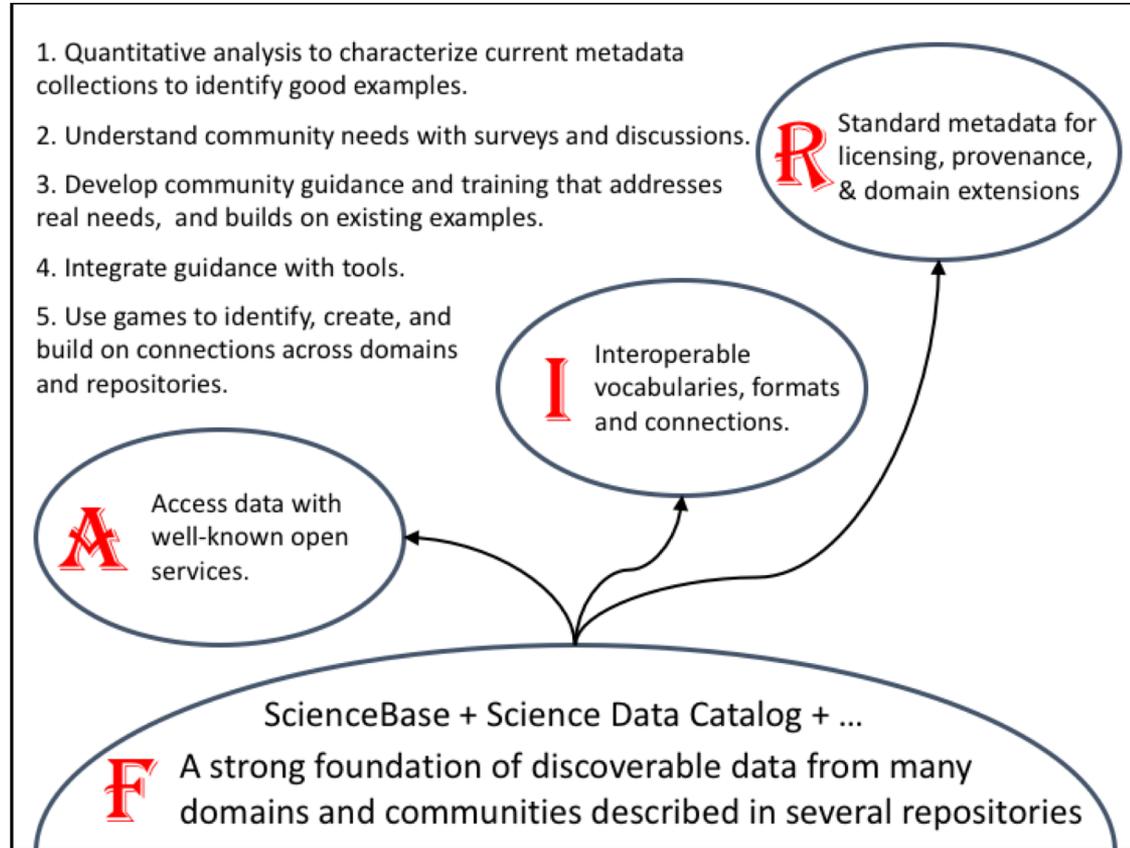


Putting the AIR in FAIR

Glenn Guempel

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USGS

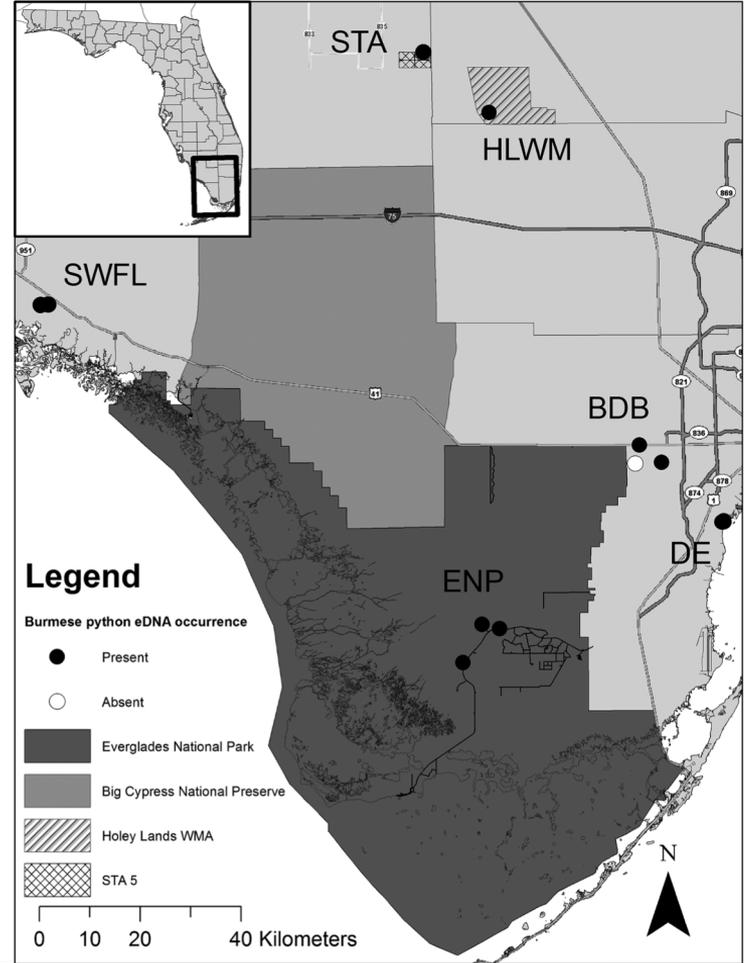


Establishing standards and integrating environmental DNA (eDNA) data into the USGS Nonindigenous Aquatic Species database

Margaret Hunter

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USGS Wetland and Aquatic Research Center

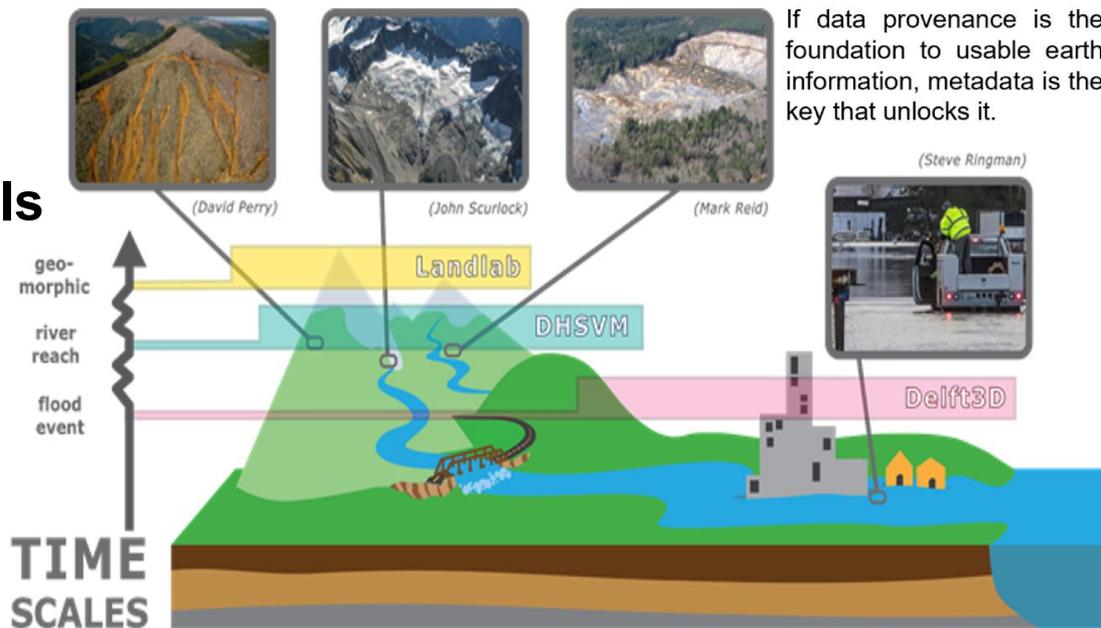


Synthesizing data provenance tactics and tools across earth science community platforms

Kristin Jaeger

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USGS Washington Water Science Center



If data provenance is the foundation to usable earth information, metadata is the key that unlocks it.

Case Study Project: 3 models + 30 researchers
 ~5 stakeholder groups with data sharing agreements +
 ~20 input datasets with metadata standards +
 ~50 model derived output datasets with NO metadata standards.

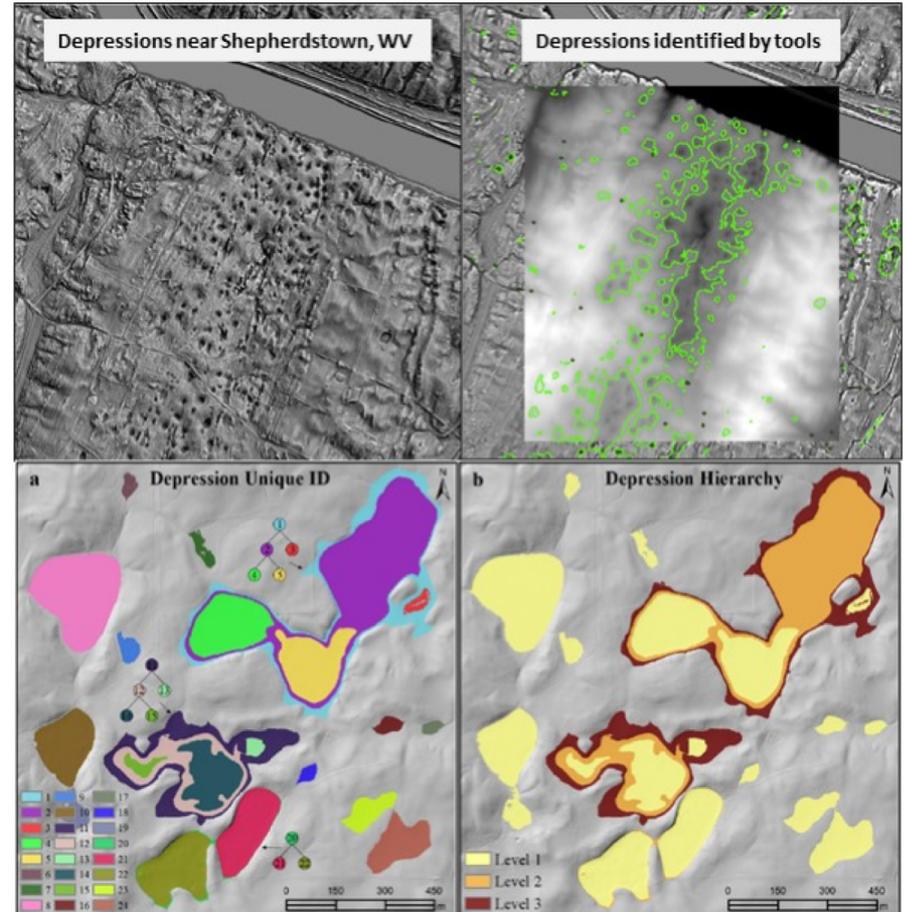


Subsidence Susceptibility Map for the Conterminous U.S.

Jeanne Jones

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Government and community magnetotelluric data: playing FAIR

Anna Kelbert

akelbert@usgs.gov

USGS Geological Hazards Science Center

EM Transfer Function Product Query

EM Transfer Function Query Parameters

Legend Data Quality Quality Warning Release Status Project Min Period Max Period

Map Satellite Draw Selection Box

Max Lat

Min Lon Max Lon

Min Lat

Release Status

Author

Site Name

Remote Site

Site ID

Remote ID

Start Date

End Date

Type

Project

Survey

Min Quality

Period

Clear Download EDI

All data are now rotated to geographic coordinates. If you downloaded any data from this database before the update of January 3-5, 2018, please update your files with these new versions.
Detailed change log is available here: [\(PDF\)](#)

Once this database and XML format are documented in a publication, we will provide a link.

Query Results: 5186 items found

Page: 1 of 52 100

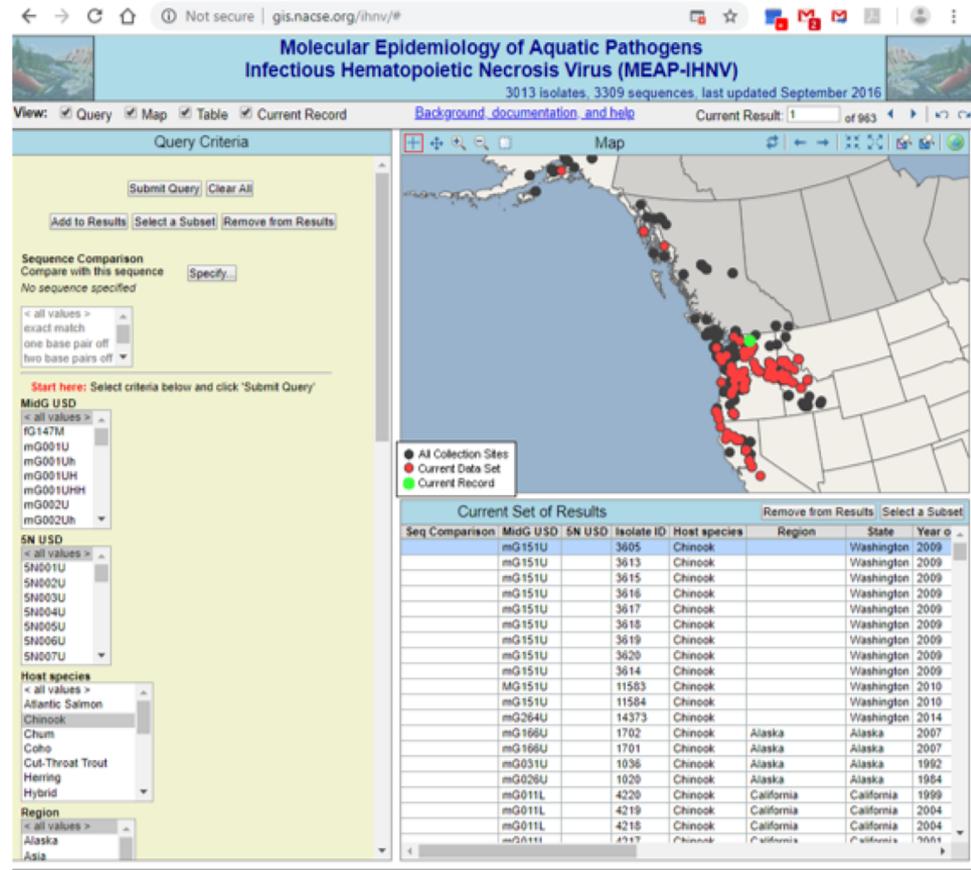
Site Name	Site ID	Latitude	Longitude	Project	Survey	Start Time (UTC)	End Time (UTC)
Heart River, ND, USA	NDE27	46.59	-101.63	USArray	Transportable Array	2017-10-20 18:52:22	2017-10-27 05:57:27
New Johns Lake, ND, USA	NDD28	47.38	-100.50	USArray	Transportable Array	2017-10-19 21:16:57	2017-10-31 17:25:00
Skaneateles Lake, NY, USA	REH56	42.89	-76.42	USArray	Transportable Array	2017-10-19 19:10:55	2017-10-31 20:42:46
North Fork Bad River, SD, USA	SDI27	44.10	-101.90	USArray	Transportable Array	2017-10-19 19:05:01	2017-10-29 17:01:59
Bitter Lake, SD, USA	SDG32	45.25	-97.28	USArray	Transportable Array	2017-10-17 16:35:08	2017-11-03 17:27:11
Two Horses, ND, USA	NDF26	46.12	-102.50	USArray	Transportable Array	2017-10-16 19:03:28	2017-10-24 20:23:12
Stratford Slough, SD, USA	SDG31	45.37	-98.29	USArray	Transportable Array	2017-10-16 17:01:13	2017-10-26 14:59:54

Interactive Web-based Decision Support Tool Advancing Accessibility of Aquatic Pathogen Surveillance and Genotyping Data for Risk Management

Gael Kurath

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USGS Western Fisheries Research Center



A generic web application to visualize and understand movements of tagged animals

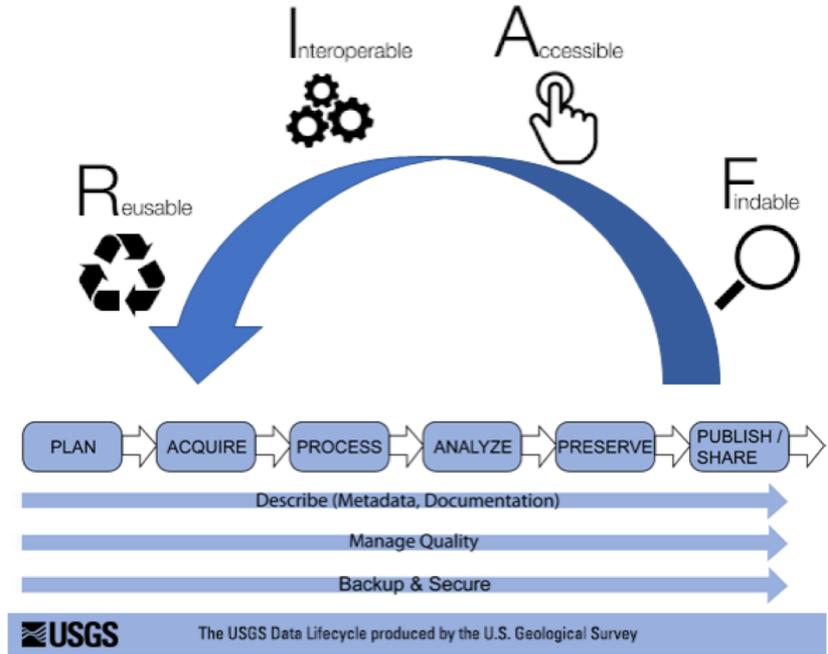
Ben Letcher

bletcher@usgs.gov

USGS Leetown Science Center



Building a Roadmap for Making Data FAIR in USGS



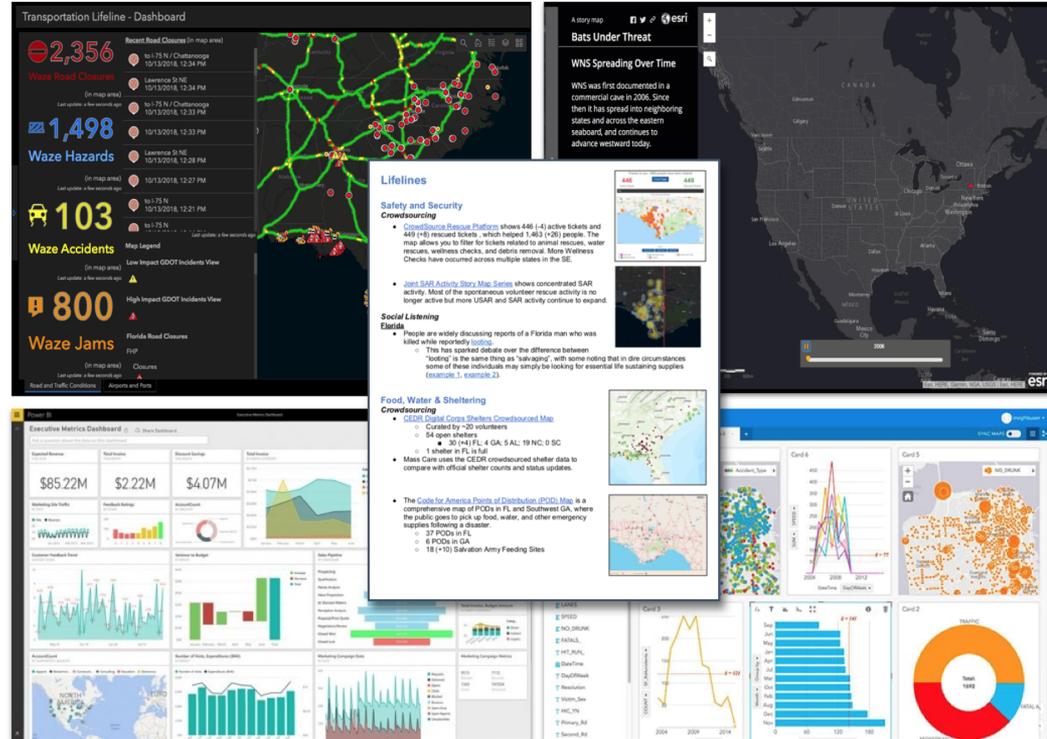
Complete the Cycle!

Developing an Analytical Tool to Compare Hazard-related Crowdsourced and Citizen Science Data to Official Sources

Sophia B Liu

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USGS Science and Decisions Center



USGS Safety Program Risk Mapper

Scott Lowe

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USGS Midwest Region Office

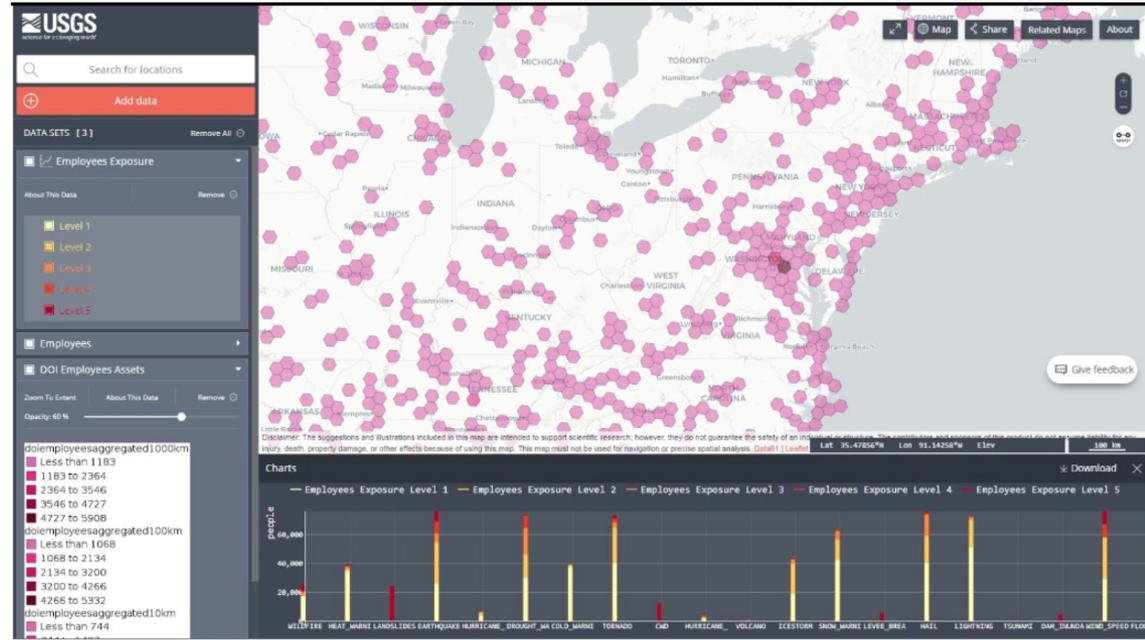


Image: Source CDI Risk Mapper Project (Example)

FishACT: Interactive Database on Fish Management Actions to Climate Impacts

Abigail Lynch

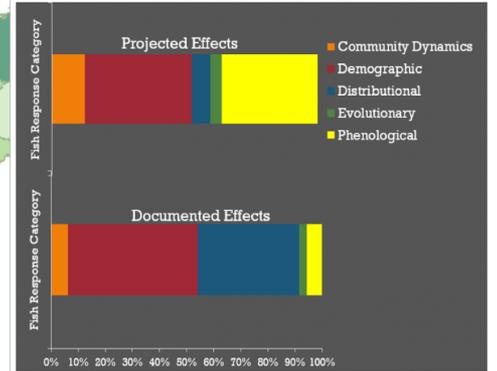
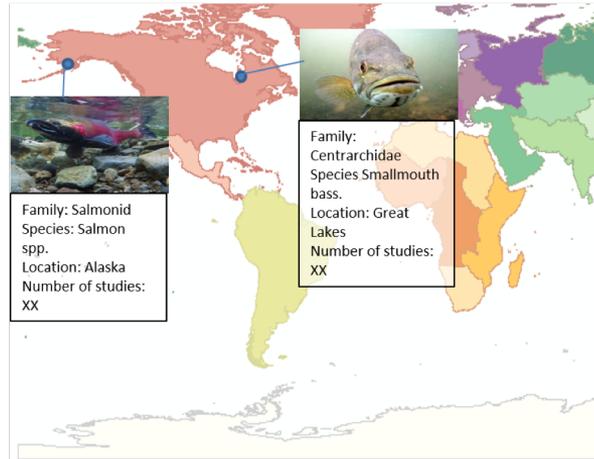
ajlynch@usgs.gov

USGS National Climate Adaptation Science Center

FishACT: Interactive Database on Fish Management Actions to Climate Impacts

Submit Research/Contact Us

Summary Information



Thermal Guild	Climate Change Variable	Country or Region	Projections or Observations	Habitat
<input type="checkbox"/> Cold-water <input type="checkbox"/> Warm-water	<input type="checkbox"/> Temperature <input type="checkbox"/> Precipitation/Flow	<input type="checkbox"/> United States <input type="checkbox"/> United Kingdom <input type="checkbox"/> Australia	<input type="checkbox"/> Observed <input type="checkbox"/> Projected	<input type="checkbox"/> Lentic <input type="checkbox"/> Lotic



Ask questions on Slido.com #8835



Coupling Hydrologic Models with Data Services in an Interoperable Modeling Framework

Richard McDonald

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USGS Water Mission Area - Model Support and Coordination Branch

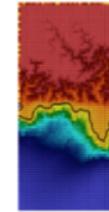
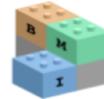
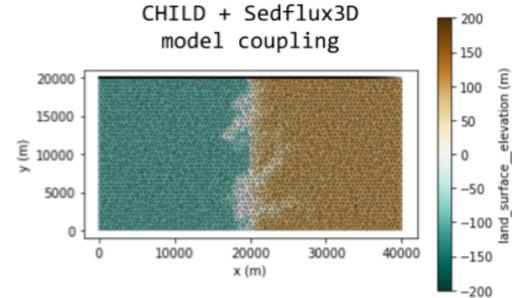
```
import pymt

child = pymt.plugins.Child()
sedflux = pymt.plugins.Sedflux3D()

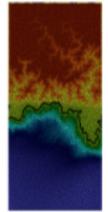
for model in (child, sedflux):
    model.initialize()

sedflux.set_value(
    "bedrock_surface_elevation",
    mapfrom=("land_surface_elevation", child)
)
sedflux.update()

child.set_value(
    "land_surface_elevation",
    mapfrom=("seabed_sediment_surface_elevation", sedflux),
    nomap=np.where(z > 0.0),
)
child.update()
```



Sedflux3D



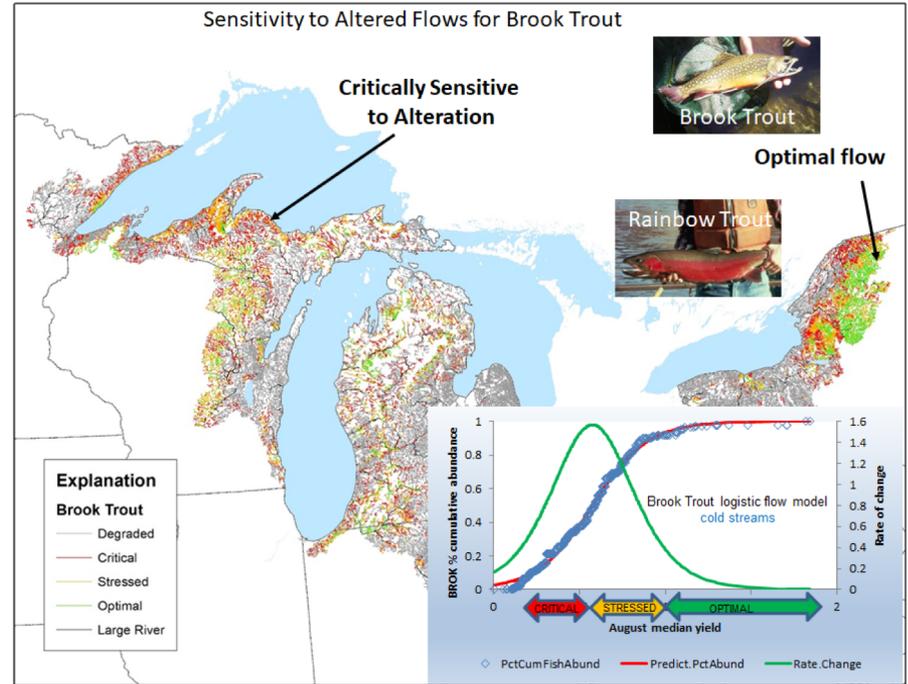
CHILD

Seasonal ecological flow models for Rainbow Trout and flow sensitivity distribution maps

James McKenna

jemckenna@usgs.gov

USGS Great Lakes Science Center Tunison
Laboratory of Aquatic Science

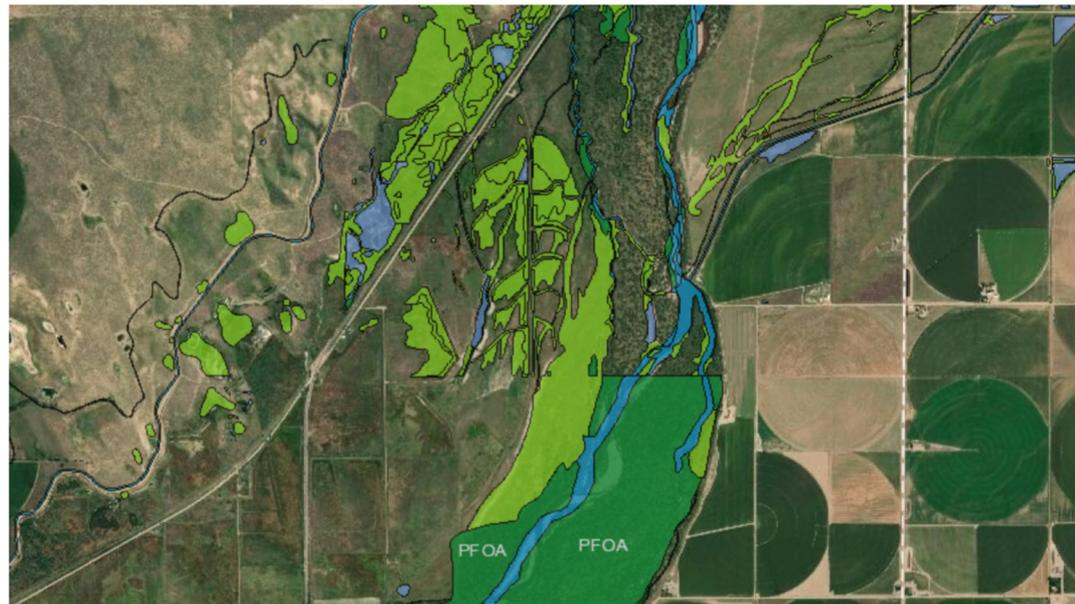


Leveraging deep learning through use of the dl_tools software package to enhance wetland mapping capabilities of the NWI

David Millar

dmillar@usgs.gov

USGS Fort Collins Science Center



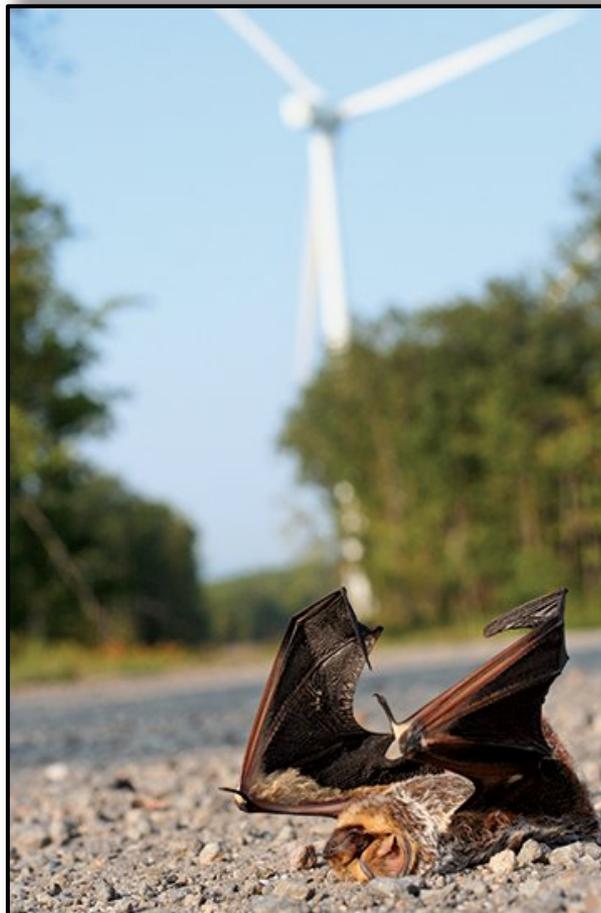
Development of Wind & Wildlife Data Information System and User Portal

Tamatha A. Patterson

tpatterson@usgs.gov

USGS Great Lakes Science Center--

Lake Michigan Ecological Research Station

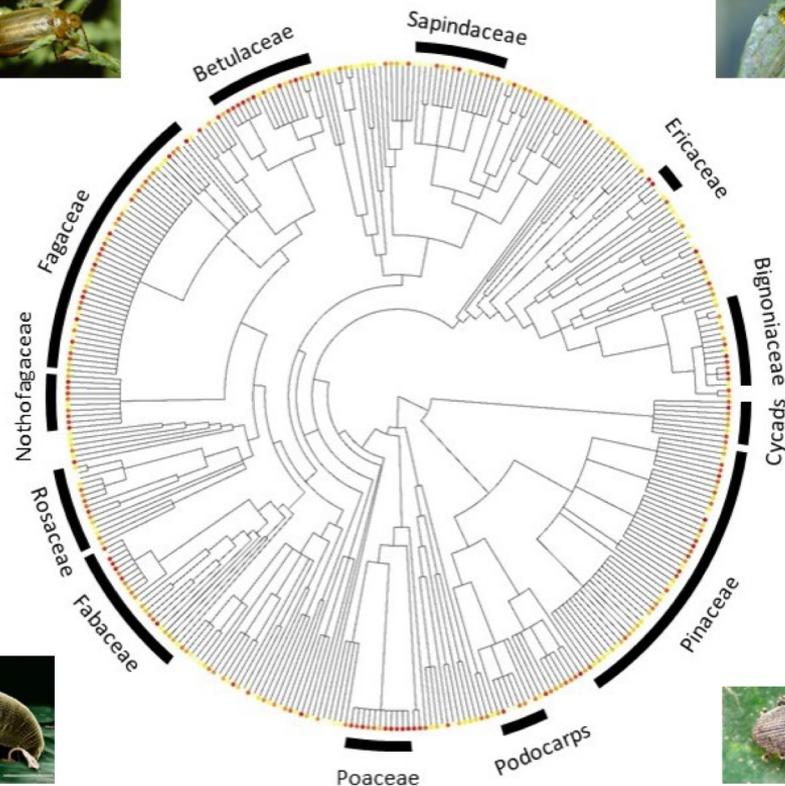


Automated tool for host test lists for biocontrol agents used for the control of invasive weeds.

Ian Pearse

ipearse@usgs.gov

USGS - Fort Collins Science Center



Building a New On-line Data Store for the SageSTEP Project

David A Pyke

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USGS Forest & Rangeland Ecosystem Science Center



SageSTEP

(Sagebrush Steppe Treatment Evaluation Project)

10 years and counting

USGS, USFS-RMRS, ARS

Oregon St Univ, Univ of Idaho, BYU,
Utah St Univ

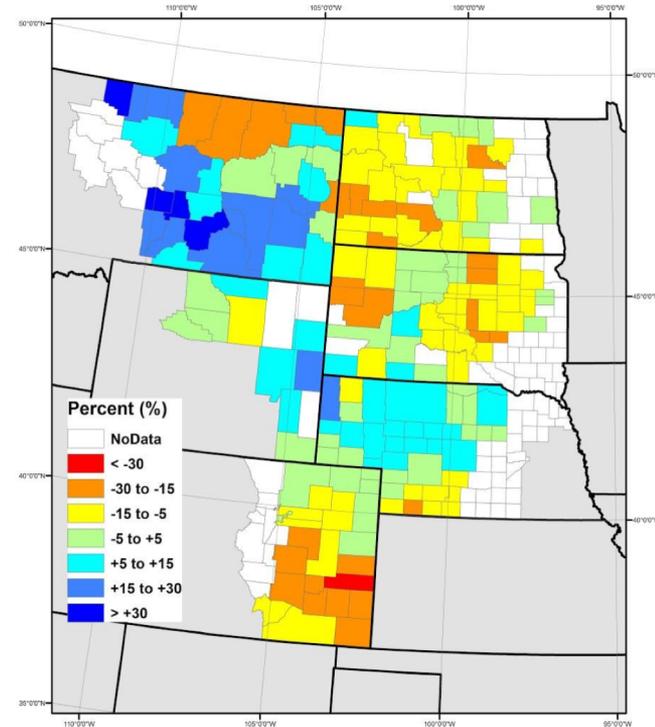
www.sagestep.org



Logistical & Treatment Cooperators:
BLM, USFS, USFWS, USBoR
TNC



Biweekly forecasts of grassland production relative to 35 year average



How much forage/soil stability/NPP
will you have this year?

Implementing a Grassland Productivity Forecast for the U.S. Southwest

Sasha Reed

screed@usgs.gov

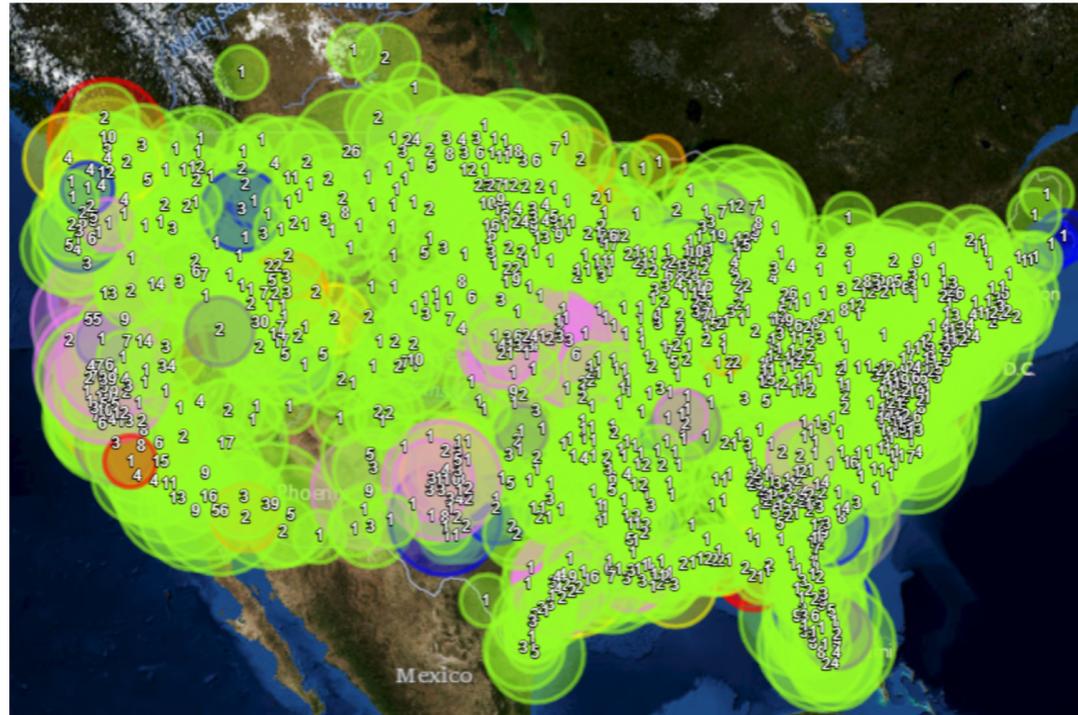
USGS Southwest Biological Science Center

Building web-service based forecasting tools for wildlife disease managers

Katie Richgels

krichgels@usgs.gov

USGS National Wildlife Health Center



Water Security in U.S. Megacities: Building Decision Frameworks Beyond Water Management

Sachin Shah

sdshah@usgs.gov

USGS - Texas Water Science Center



ExDetect: a cloud-based remote sensing and GIS tool to detect and monitor the spread of exotic annuals around energy development sites

Miguel Villarreal

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USGS - Western Geographic Science Center

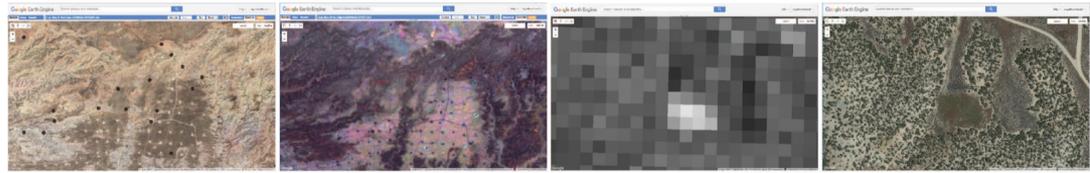


Image Analysis with Machine Learning: tile-drain detection and delineation in agricultural landscapes

Tanja N Williamson

tnwillia@usgs.gov

USGS Ohio-Kentucky-Indiana Water Science Center

